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ABSTRACT

A three-year study of two-way communication in correspondence education was conducted at the University of Lund in Sweden. Data were collected for three experimental series concerning: (1) the assignment for submission, (2) systematic telephone tutoring, (3) corespondence study combined with group meetings. Series One was a study of the structure of postal two-way communication; answers were sent to the school, corrected, and returned to the student. Series Two investigated the possibility of reinforcing the postal two-way communication with the aid of telecommunication, so the tutor systematically called the student after the lesson had been corrected and returned. In an effort to avoid the isolation of home correspondence study, students in Series Three participated in group meetings. Final results from the project will be published at a later date. Twelve references are cited. (Author/DS)

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TECHNICAL REPORT

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DEPARTMENT OF EDUCATION
UNIVERSITY OF LUND

TWO-WAY COMMUNICATION IN DISTANCE EDUCATION

- AN EVALUATION OF VARIOUS MODES

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RUNE FLINCK

PROJECT: TWO-WAY COMMUNICATION IN CORRESPONDENCE EDUCATION

The research project

Since July 1973 we are working at the Department of Education at the University of Lund in Sweden with the research project Two-Way Communication in Correspondence Education. The project is being carried out in co-operation with EHSC (the European Home Study Council) and data are being collected in some of the EHSC member schools.

The project plans originate from the answers to a questionnaire distributed by the EHSC Research and Development Committee to the member schools in 1972. In the questionnaire they wanted to know in which field it was most important to try to carry out a research project. The answers to the questionnaire indicated that it would be most desirable to study the importance of two-way communication in correspondence education. Many different suggestions were given as to how we ought to study this essential aspect. From among all these we selected some which we thought it would be realistic to study. For the research project we then asked the Bank of Sweden Tercentenary Fund for financial support and were granted funds for a 3 year project. Our intention was to complete the project in 1976, but today we know that we need one more year and we will finish in 1977.

The collection of data is now running for the three experimental series which constitute the research project. These three experimental series concern:

1. the assignments for submission
2. systematic telephone tutoring
3. correspondence study combined with group-meetings.

I will proceed to describe the arrangements and the aims behind these three experimental series. In this context I will also give details of pilot studies we have performed to throw some light on certain questions, which we have brought up when designing the experiments.

The first experimental series

In experimental series 1 we are studying the structure of postal two-way communication. We know that by tradition the contact between the student and the school is maintained by means of the assignments for submission. The answers of the exercises are sent to the school, where they are corrected. After that they are returned to the student.

We have found that these assignments for submission are of varying importance in different parts of the world. In Soviet Union and GDR for instance they

play a less important role, while in the Western world we as a rule attach greater importance to the postal communication. Their main task should be to support feedback, motivation, activity but also to give supplementary instruction - above all individual instruction.

It seemed natural to us to examine assignments for submission in correspondence education. How important is this postal two-way communication really? How much does it matter if we increase or reduce the number of submission occasions? Does the ordinary student want a large number of contacts or would he prefer only a few? Which will give the best result? Is the quantity of work connected with the exercises on each occasion of vital importance? Does the type of assignments - objective type or essay type - make any difference? These are some of the questions which we wanted to examine.

In the experimental series we have decided to vary the submission frequency as an independent variable in what we call the main experiments. In some selected courses the submission frequency is varied so that one group of students, selected at random, has only 2 submissions, another group 4, and a third group 8 submissions. In these main experiments the students are working with multiple-choice tests. In some control experiments the multiple-choice tests have been replaced by essay tests or short-answer tests. In some other control experiments both the frequency of submission and the number of questions per submission are varied.

As dependent variables to check the result we are using data such as completion - non-completion of the course, the results from a final test, the attitudes of the students to the work, and the total time the students are using to work with the course material.

The experiments are well under way and the collection of data should be finished during 1976.

Thus one of the main questions in the experimental series concerns the proper frequency of submission, that is the number of submissions in relation to the length of the course. Both in practice and in opinion there seems to be a great variation. A Dutch correspondence school declares in the study-handbook that each study unit including the assignments for submission demands just 3-4 hours of work. An English institute states that the study units on an average imply around 25 hours of work. In a questionnaire which was sent to German correspondence schools in the sixties it was found that the average time per study unit varied between 2 and 70 hours of work.

To get a clear idea of how the frequency of submission should be adequately varied on an experimental basis in our investigation, a pilot study was carried out in 1974. Using questionnaires distributed to students participating in a number of courses which were planned to be included in the experimental series, we wanted to find out how much time the students spent on, on one hand the entire course, on the other hand the assignments.

I will not at the moment give details of the results which formed the basis of the decision about the variation of the submission frequency for the different courses in the experimentation. These results will be presented later in a report from the project. But there are other interesting details which can be described.

(1) The variation between different courses was great. If we estimate the average time per study unit for all of the students in a certain course, it varied from 1,5 hours in a course of ecology at one school up till 40 hours in a language course at another school.

(2) The variation between different students in the same course was still greater. As an example we found in a course of

physics	1 - 75	hours/study unit
language	3 -120	"
psychology	5 - 60	"
ecology	0,5- 8	"

(3) Another interesting result from this questionnaire was how much time the students are using to work out the answers of the assignments for submission. In a course of mathematics the students said that they on an average used roughly 35 % of the entire time of the study unit working on the exercises. The individual variation extended however from 15 % to 55 % of the time. In a course of physics the average was 24 %, but here the individual variations were greater. One student had used just 9 % of the study time for the exercises, while for another it was almost 75 %.

As I have mentioned earlier we have been discussing the importance the submission exercises in the correspondence course have from a pedagogical viewpoint. To get some information about the views of different schools, we have from the project sent a questionnaire to European correspondence schools to find out practices and opinions about the submission exercises and other methods for two-way communication. From the answers of this questionnaire it

can be noticed that the statement:

"Assignments for submission constitute an important element in correspondence courses."

was marked "strongly agree" by 31 answering schools and marked "agree" by the remaining 3 schools.

Furthermore these who answered the questionnaire were asked to state which of 12 possible functions they meant that the assignments for submission above all had. At the top of the list we found these:

		Rank-point
1.	"to give the students effective feedback - help them to correct their mistakes and control their progress"	92
2.	"to motivate the students, owing to the fact that the assignments for submission serve as sub-goals"	59
3.	"to make it possible for the school to evaluate the students' achievements during the course, in order to be able to give each student help ('formative evaluation')	44
4.	"to activate the students"	37
5.	"to give the students opportunities for application and transfer of their knowledge".	34

The rank-point has been estimated so that each school has chosen what was in their opinion the five most important functions. Their first choice has been given 5 points, their second 4 points and so on. The points have been added up. As 32 schools answered this question the maximum rank-points could have been 160 points.

In the post-questionnaire we are sending to the students participating in our experiments, we have a corresponding question. The answers which have been reported here are what the schools consider about the function of the assignments for submission. The students' opinions will be presented later as a result of the research project.

The results from our pilot studies, which I have reported here, will be published as reports from the project during this year.

The second experimental series

The second experimental series of the research project concerns the problem of whether it is possible to reinforce the postal two-way communication with the aid of tele-communication. In certain reports the opinion has been put forward that one of the most negative elements in correspondence studies

is that the students feel socially isolated because they are working alone in their homes. There are research reports showing this. But there are also other reports - especially from Germany - stating that this fear is exaggerated. What is true we do not know. We only know that those students studying by correspondence are studying alone in most cases. Some of the students certainly have a feeling of isolation and others do not. We will in our project try to shed some light on this particular question in all of our experimental series. But if this feeling of isolation is characteristic for correspondence students, we will have an opportunity to eliminate this feeling both by using the telephone and by arranging study groups.

The main purpose of this experimental series - the second one - is, however, to study if it is possible by supplementing the assignments with a telephone call from the tutor at the school, on one hand to improve the achievements of the students, and on the other hand to improve the motivation of the students and in this way reduce the total time of study.

The telephone can be an excellent aid in distance education. It has been used in different ways. We have in our research project made a survey of the literature concerning the use of the telephone in educational contexts and come to the conclusion that the telephone has been utilized in mainly 4 different ways:

(1) Teleteaching is operating by means of a two-way transmitter (telephone) placed in a classroom. It enables a sick or handicapped student to keep up with his class work without being physically present in the classroom. The student can at home hear all that is going on in the classroom, and he can indicate by means of a signal when he wants to speak and answer questions. When he speaks everyone in the classroom is able to hear what he says, as if he were present.

(2) Telelecture also operates by means of a two-way transmitter: A teacher can through the use of the telephone - located anywhere in the country - give a lecture - simultaneously - to one or several groups of students located in different places. The teacher's voice is amplified in the classroom, and the students can communicate with the teacher through a series of microphones connected to the telephone line.

(3) Dial-access is an information service system that provide a person with brief summaries on different topics. The summaries are recorded on tape and become available by dialing an operator who switches the call to a playback machine and inserts the tape cartridge requested. Most dial-access systems operate in connection with libraries.

(4) Teletutoring enables a student by means of a telephone to get in touch with his tutor to have individual support in his study work. The student is studying independently with the help of preproduced study material such as a correspondence course. The tutor then calls the student - or the student calls the tutor - and they discuss the work. This two-way communication is always between one student and one tutor.

Both teleteaching and telelecturing could be used by correspondence institutes but seem to be rather uneconomical. More interesting and more realistic for correspondence institutes are the other two forms. Dial-access has mainly been used as a service to specific occupational groups, such as medical doctors and nurses. In Wisconsin, USA, a library has for many years been available to medical staff who can call a center and be supported by up-to-date medical information. But dial-access has also been utilized in conventional schools. A report from Denver, Colorado, indicates how they developed equipment for manual-served dial-access. Several thousands of tapes were available from a central school library. The students called the librarian who selected the desired audio tape and placed it on a play-back unit which sent the lesson over the telephone to the student. This system has had great success among both teachers and students. The plans will be expanded and also serve adults and play the role of tutor for those who may wish to follow their children's progress in school.

The other form of using the telephone which can be of interest for the correspondence schools and which we will take up in the research project is teletutoring. This form has already been used in connection with correspondence courses. The German multi-media-project TELEKOLLEG allowed their students to call and ask questions to their teachers at certain times. The answers were given on television. Chicago TV College has a teacher available a couple of hours a week by telephone. The students can call the teacher and ask questions. The answers will be given promptly.

"Pure" correspondence schools have however already used the possibility. A couple of years ago Hermods in Sweden allowed the students of a course in Mathematics to call a tutor. Just 12 % of the students who had the opportunity to call did so. A simple analysis indicated that these students obtained a better result than those who were allowed to call but did not do so.

At the Swedish National College of Adult Education in Härnösand they have for many years had a system where the students can call a telephone-answering machine to put questions to a tutor. The next day the tutor calls the student and they can discuss the problem together.

In Virginia, USA, there has been for the past couple of years a combined system of telelecturing and teletutoring. The project DIAL (Direct Instruction for Adult Learning) serves adults who do not want to participate in more conventional forms of adult education. The student works with printed material but can have a lesson played by telephone. In addition the student can call a teacher to get assistance. The telephones are manned 14 hours a day.

Thus the telephone can be used as a supplement in distance education. When we were designing this series in the project, we really wanted to find a new way of using the telephone. We decided that in our experimentation the tutor should call the student systematically. The students are studying by correspondence but when they have submitted their assignments and these have been corrected and returned to the students by the school, the tutor calls the student. The assignments are the basis for this telephone call and the conversation circles round them. But there are no restrictions introduced. The tutor and the student can talk about anything.

The experiments consist of three different courses - foreign language, mathematics and economy - and are carried out at three different schools in three different countries. The students enrolled in these courses are selected by random in two groups - one experimental group and one control group. The students in the experimental group will receive telephone calls from their tutor. The students in the control group are studying in a conventional way by correspondence.

All telephone calls are recorded for further analysis. This analysis will be a kind of content analysis to find out what the tutor and the student are discussing. If a distance learner has a feeling of isolation when he is studying alone at home, maybe we can in the analysis of the telephone calls find some confirmation of this supposition.

As in experimental series 1 we can check the effects by comparing records of course completion, final tests and questionnaires to the students. We hope that the experiments will tell us about the effects of cable-borne two-way communication as a supplement to our traditional postal communication.

The third experimental series

As well as in the second experimental series we are in the third interested in studying in which way the predicted social isolation can be treated. I have already touched upon the question of this feeling of isolation among the correspondence students.

Besides correspondence studies in their home the students in this series participate in some form of group-meetings. Different combinations of correspondence studies and group-meetings are common all over the world. This face-to-face meeting seems to have the greatest importance in socialist countries. But even in the extensive multi-media projects of distance education they are working with group-meetings. There are summer courses in Open University, week-end meetings in TELEKOLLEG in Germany, conferences in Chicago TV College.

We posed a great number of questions in this series. If we want to neutralize the predicated social isolation among correspondence students, will any form of group-meeting suffice? Is it necessary to have a trained, skilled teacher as a leader ot these meetings? If we are working with a skilled teacher, which role should he play? Should he be an available resource or should he conduct the activity?

Furthermore we have to ask what is the most essential to the students - to establish contact with the teacher or to establish contact with other students? Which role do we want the course material to play in this type of activity? Which role have the assignments for submission?

Besides we wanted to study the importance of these group-meetings concerning feedback, motivation and individual instruction.

The problems involved here are very complex, but we do hope that we will find answers to some of them in our research project.

In all the experiments included in this series there are students studying the same course as pure correspondence students. This group is important since we have a possibility to check our results against it. This requirement of having a group of pure correspondence students has complicated our choice of courses for the experiment.

In one of our experiments the students are working without any teacher. They work in so-called study circles. The circles have no skilled teacher. One of the members in the group is responsible for the meetings and he/she calls the group together each week. At the meeting the students discuss the content of the course and the assignments.

Another experiment is arranged as a group-meeting with a teacher. The students are divided into two groups where the teacher in each group has been instructed to work in different ways. In the first group, which we call teacher-controlled-teaching, the teacher takes the initiative to the activities going on in the

classroom. The teacher selects the sections which will be discussed. His experience determines what will be discussed. Of course the students have the opportunity to ask questions in connection with the course material but the principal choice of subjects to be discussed is made by the teacher.

In the other group, which we call learner-controlled-guidance, the students take the initiative to what will be discussed. The teacher is instructed to be more passive in taking initiative. What the students have found difficult during their work at home they are forced to discuss with the teacher. In this case the teacher is a resource which can be utilized by the students along with the course material.

In one of the schools where this experiment is being carried out they have already had quite a long experience of combined correspondence study. The teachers participating in the experiment have earlier taught in combined courses. Our instructions to the teachers probably imply a change in their normal teaching routines. To find out if this is true a survey of combined teaching in its usual form is being made parallel to our experiments. This survey will make it possible to find out if we through our instructions really produce any changes in the teachers' behavior.

We also have a third experiment in this series in which we are studying the effects of a longer intensive teaching period on the students. In the previous experiments the students will meet one evening each week or every two weeks. In the third experiment the students are studying at a school for 5 weeks during one semester. During this period they are given instruction every day. It is a concentrated school-period of 5 weeks, followed by correspondence studies at home.

In all the experiments in this third experimental series we are working with two different courses. During 1975 courses in other subjects will be included. As in the other two series we are checking our results against completion rate, final tests, attitudes of the students.

Why do adults study by correspondence?

What I have outlined here is the design of our experimentation. Of course many problems are unsolved but we hope to shed some light on two-way communication in correspondence education.

We are also interested in closely allied problems which can be by-products of our work. We know for instance that during recent years a great deal of work has been done to find out the reasons of adult students for participating in adult education. Some of these concern students participating in evening classes or more regular ways of studying. One investigation - the Manchester study - has studied the same problem concerning correspondence students.

Since we were carrying out studies in several countries we considered that we could make an interesting comparison between correspondence students in different countries. In order to explore the reasons of correspondence students for participating in studies and especially in correspondence studies, we have presented to all subjects of our experiments a questionnaire in which they are asked to evaluate a number of statements concerning their reasons for studying.

Besides describing different motives for studying we want to use the different motives of the student as back-ground variables when we are presenting the results from our experiments.

Systematic-analytical study

In addition to our experimentation we will also try to relate general principles of learning and teaching to the specific instructional conditions of corresoondence study. This may be seen as a presumptuous task. Our intention is, however, to select information from research performed in the field of correspondence study and relate it to general principles of learning and teaching. We know that our level of aspiration is high. Maybe we will reach at least some steps in this direction.

Evaluation problems

As in all experimentation there will be problems in finding the criteria for evaluation. Many studies in education have dealt with those problems. To find the "true" criteria for the effectiveness of different teaching methods is as difficult as finding criteria for a "good teacher". No one has yet found the criteria which characterize a good teacher. Nor has anyone found criteria for evaluating the best teaching method.

Many media researchers have for several years been trying to emphasize a certain new medium as superior to other media. The criteria for evaluation of a new medium typically involve comparison with other media, and since the

medium most familiar to most of us is the teacher involved in face-to-face instruction, there is an inherent tendency for this type of instruction to become the standard of judgement. It is necessary to exhibit great care when doing this, because a certain madium is not necessarily a substitute for face-to-face instruction. Each medium - or teaching method - will have its own inherent characteristics, which should not be expected to imitate face-to-face patterns.

We have, of course, the same criteria problem. But an advantage to us is that we are not using as a standard of judgement regular classroom teaching and learning. We are just working with correspondence students and do not make any comparisons with others than those students. The control groups in our experimentation are students studying conventional correspondence courses. Those are our basis for conclusions about the effectiveness of various modes of changing the two-way communication.

In our research project we are not dealing with the question of how superior the correspondence method is. We just want to prove how it is possible to make correspondence education better.

Pilot study

In Sweden there has been a growing interest in distance education on university level during the last few years. As early as in 1953 Hermods started to develop correspondence courses for this level. More than 4.000 students have passed their examinations after studying these courses.

However, the initiative has now been taken by the Office of the Chancellor of the Swedish Universities. In 1973 the Office invited a number of departments to participate in experimental work where distance education should be developed as an ordinary activity of the department.

At the Department of Education at the University of Lund a course in educational technology was developed. Our research team had the chance of following this work very closely, and also to perform some evaluative studies which should be of use to our main research, especially to the second experimental series concerning telephone tutoring.

The course was scheduled as a correspondence course with four week-end meetings at the department during the 7 months the course lasted. During the whole course and between the meetings the teachers were in contact with the students

by telephone. The teachers were instructed to phone the students at certain points, but the students were allowed to call teachers whenever they wanted.

For the experimental work there were restrictions in the number of students allowed to participate. 22 students completed the course. Most of them had previous experience of university studies.

The telephone was used in three different ways in this course:

(1) the tutor called the students in connection with the assignments for submission

(2) as a means to stimulate and motivate the students in their work at home (the teacher called every two weeks)

(3) as a resource for the student (there was an automatic answering machine) to get in touch with his tutor.

All the telephone calls were recorded and analysed. In all 140 calls were exchanged, which means an average of 7.37 per student. Of these 140 calls 119 were made by the staff, the remaining ones coming from the student.

55 % of the calls were made in connection with the assignments, 30 % were as stimulation/motivation and the rest, 15 %, were calls from the students.

There were no restrictions in the telephone conversations, neither in time nor subject matter. On an average each call lasted 7.81 (7:49) minutes with a variation from 1:19 min up to 25 min. All the telephone calls started with exchanges of courtesy. Then the student almost every time began to ask questions about the study material. The questions concerned obscurities in the texts of the exercises. The teacher's comments on the exercises submitted were also discussed, and the teacher was able to give further comments.

About 30 per cent of the telephone calls included at least some discussion about things irrelevant to the course: personal problems, "wind and weather", and so on. But the time devoted to these things varied very much, from just a few seconds up to around 75 per cent of the total time for the call. In 10 per cent of the calls more than 50 per cent of the time was spent on discussion of a more personal nature.

At the moment the results mentioned above are preliminary. A report from this pilot study is in preparation and will be published this summer. The preliminary analysis has, however, been of great value when outlining the design of the experimental study.

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